A significant range extension for the Chestnut Dunnart *Sminthopsis archeri* (Marsupialia: Dasyuridae) in north Queensland

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Introduction

The Chestnut Dunnart *Sminthopsis archeri* is a rarely encountered dasyurid. Only a handful of records is known from the tropical savannas of northern Cape York Peninsula and southern Papua New Guinea (Van Dyck 1986; Flannery 1995). Within Australia the species was previously considered endemic to Cape York Peninsula (Winter and Lethbridge 1995). Despite almost two decades of search effort throughout Cape York Peninsula very few recent records have surfaced (Winter and Atherton 1985; Woolley 1993; see review of unpublished data in Winter and Lethbridge 1995). The last documented capture of *S. archeri* was in 1993 in the Iron Range area (Leung *et al.* 1994).

Sminthopsis archeri has been previously captured in tall *Eucalyptus tetrodonta, Corymbia nesophila*, *Erythrophleum chlorostachys* woodlands on red earth soils, though it is also known from tall heathlands (Leung *et al.* 1994; Flannery 1995; Van Dyck 1995; Winter and Lethbridge 1995). Data regarding biology, distribution and status are correspondingly scant and restricted to locality descriptions, breeding and morphometric features of captured animals (Van Dyck 1995). *Sminthopsis archeri* is classified as rare in Queensland (Queensland Government 1997) and "data deficient" in Commonwealth assessments (Maxwell *et al.* 1996). This note reports an exceptional new locality for the species, representing a significant range extension.

Study Area and Methods

The specimen of *S. archeri* reported here was collected during a baseline vertebrate fauna survey of Blackbraes National Park (19° 30'S, 144° 30'E). This recently gazetted reserve is situated 180 km north-east of Hughenden, but at a latitude that is almost due west of Townsville. Blackbraes lies on the edge of the Einasleigh Uplands and Gulf Plains bioregions, an area characterised by a complex geology consisting largely of a series of ranges and plateau surfaces up to 1100 m in altitude. This includes the largest areas of basalt flow in north Queensland. Rainfall is high (600-1200 mm), and the vegetation is predominantly open *Eucalyptus* woodland, though many large wetland systems occur in the basalt areas (Sattler and Williams 1999).

Vertebrate fauna sampling at Blackbraes utilised a standardised trap and search quadrat array and included measurement of habitat and floristic data. A total of 36 quadrats were surveyed between 19th March and 1st April 2003. Each quadrat sample consisted of 20 Elliott traps and 4 pitfall traps deployed over four nights, resulting in a total of 2880 Elliott trap nights and 576 pitfall trap nights for the survey period. Complete descriptions of these methods can be found in Kutt (2004). There were two general landscapes sampled at Blackbraes: the tall forest vegetation of the sandstone, granite and metamorphic geologies of the Juntala Plateau (>1000m), and an area of predominantly basalt at a slightly lower altitude (<800 m). Other native non-volant small mammals recorded during the surveys in each landscape included: Lakeland Downs Mouse *Leggadina lakedownensis*, Delicate Mouse *Pseudomys delicatulus*, Eastern Chestnut Mouse *Pseudomys gracilicaudatus*, Pebble-mound Mouse *Pseudomys patrius*, Northern Brown Bandicoot *Isoodon macrourus* and Rufous Bettong *Aepyprymnus rufescens* on the Juntala Plateau; and Common Planigale *Planigale maculata*, Common Dunnart *Sminthopsis murina* (captured by SJC, 4th November 2003), Spectacled hare-wallaby *Lagorchestes conspicillatus*, *L. lakedownensis*, House Mouse *Mus musculus*, *P. gracilicaudatus* and *A. rufescens* on the Basalt flows.

Description of New Locality for *Sminthopsis archeri*

An adult female was captured in a pitfall trap on 27 March 2003 (at 19° 33' 04"S, 144° 03' 36"E, QM Voucher No. QMJM15794, weight 12.0 g, snout-vent 79 mm, tail 77 mm). The habitat was tall (to 20 m) mixed *Eucalyptus* sp. (Stannary Hills G.W. Althofer 402), *Corymbia citriodora*, *C. peltata* and *Callitris* sp. woodland over a ground stratum of *Xanthorrhoea latifolia*, *Themeda triandra, Heteropogon triticeus, Sarga plumosum, Arundinella pilosa* and *Indigofera pilosa*. An intensive fire had burnt the trapping quadrat 14 weeks previously, and the ground cover vegetation was regenerating after recent rain in the preceding month (about 200 mm). This cover comprised of 51% bare ground, 7% litter and 42% of perennial and annual grasses and forbs, though the foliage projective cover of the strata to 1 m was only 25%. A Delicate Mouse *Pseudomys delicatulus* was also captured at this site. The soils comprised sandy-clays of granite origin. The mean annual rainfall of Blackbraes over the past 62 years has been 796 mm, and the altitude of the trap site was approximately 1000 m, lying on the edge of an extensive Tertiary plateau of massive red earths. This site also lies at the headwaters of the Gilbert River catchment that flows northwest into the Gulf of Carpentaria.

Discussion

The discovery of *Sminthopsis archeri* at Blackbraes National Park, in the Einasleigh Uplands bioregion was, to say the least, entirely unexpected given the species was previously considered endemic to Cape York and adjacent

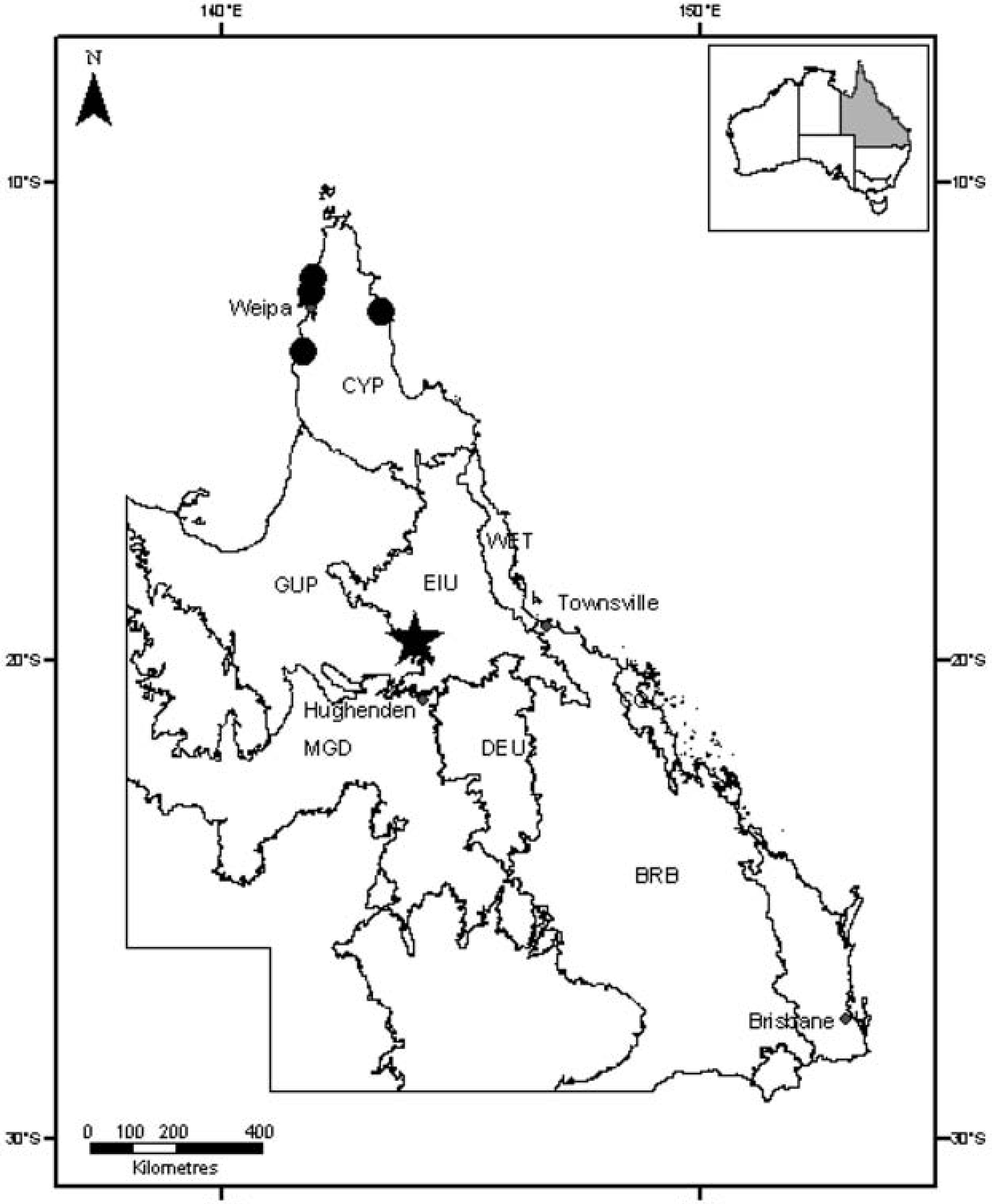

Figure 1. Locality data for the Chestnut Dunnart *Sminthopsis archeri* in Queensland. Solid star represents collection site of QMJM15794, Blackbraes National Park. Solid black circles indicate previous records from the Queensland Museum, Winter and Atherton (1984) and Wildnet (Environmental Protection Agency 2003). Bioregion abbreviations: MGD = Mitchell Grass Downs, DEU = Desert Uplands, GUP = Gulf Plains, CYP = Cape York Peninsula, EIU = Einasleigh Uplands, WET = Wet Tropics, BRB = Brigalow Belt.

tropical savannas of New Guinea (Van Dyck 1986). The biogeographic similarity of these two regions on either side of Torres Strait is well documented (Schodde and Calaby 1972). Historically this species has been an elusive prize, and since its collection in the late 19th century, its status has been a source of uncertainty (Van Dyck 1986). Recent targeted searches in areas of its known occurrence have been unsuccessful (Woolley 1993; Winter and Lethbridge 1995; ASK unpubl. data 2003).

The new locality represents a range extension of over 1000 km. This represents a marked biogeographic and climatic shift from the coastal and very wet (1200-1800 mm) monsoonal habitats of northern Cape York Peninsula to an upland wet-dry tropical biome (600-1200 mm). However, the Einasleigh Uplands has been recognised as a biogeographic crossroad, with a high degree of avifaunal hybridisation and integration between northern and south subspecies (e.g. *Poephila*, *Gerygone*, *Sittella*, Ford 1986). Many northern Australian and Cape York bird ultrataxa (subspecies) are distributed south into this region of the Einasleigh Uplands/Gulf Plains (Schodde and Mason 1999). As further evidence of this faunal intermingling, *S. archeri* was sympatric with Greater Gliders *Petaurus volans* (species more typical of eastern mesic forests), the rodent *P. delicatulus* (a species widely distributed throughout the northern tropical savannas), and the reptile *Eremiascincus richardsoni* (a species widely distributed throughout central Australian deserts).

This pattern of disjunct distribution is not without precedence. A number of birds, mammals and reptiles from Cape York Peninsula are distributed in pockets of suitable habitat in southern wet-dry tropical savannas (Schodde and Calaby 1972; Schodde and Mason 1999; Kutt and Kemp 2005), though many of these typically remain extant only in rainforest and adjacent wet forest in the Wet Tropics bioregion due to historical climatic isolation of these high altitude areas (Winter 1997). Furthermore, Blackbraes National Park lies on a series of loosely connected sandstone ranges, plateaus and gorges that run along the Great Dividing Range from southern Queensland (e.g. White Mountains, Carnarvon Gorge). These environments are notable for a range of endemic, isolated and disjunct plant and animal populations (Kutt *et al.* 2003). Other species of dasyurid have disjunct populations, most notably *S. leucopus* and *S. murina*, both moderately common in south-eastern Australia, but also occurring in a isolated populations in north-eastern Queensland (Van Dyck 1985). However, there is some doubt as to whether these fragmented distributions are isolated, or simply reflections of the naturally low abundance. *Sminthopsis* species are notoriously trap-shy, and coupled with the paucity of bioregional fauna surveys through many parts of central and northern Queensland, this may influence current knowledge of distribution patterns.

The implications of this record for the conservation of *S. archeri* are ambiguous. A single record provides little data, but the locality and range extension indicates that suitable habitat may occur within a potentially large area. The new record derived from a site recently burnt, as had a previous capture near Weipa (Winter and Atherton 1985), however, the fine-scale controls on its distribution or threats are still largely unknown. Vertebrate fauna composition and distribution data in the Einasleigh Uplands and Gulf Plains are lacking and urgently required. Again this record reiterates the value of on-going, large-scale inventory fauna surveys, a pursuit considered of little research merit in the current climate of environmental risk management and reactive biodiversity conservation (Beckwith and Moore 2001).

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